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EXAMINER	
SHANNON, MICHAEL R	
ART UNIT	**PAPER NUMBER**
2614	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/845,510	BISHER ET AL.	
	Examiner	Art Unit	
	Michael R. Shannon	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 14-24, and 36-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al (USP 6,819,036), cited by Examiner.

Regarding claim 1, the claimed "method for providing a multicast of a packet, which is included in a transport stream, in a digital network" is met as follows:

- The claimed step of "receiving at an input port the transport stream having a plurality of packets included therein" is met by the reception of the transport stream containing multiple packets (or cells, as they are often referred to) at the input to the ATM switch and multiplexer, which performs CP/VC switching on all forward data [col. 6, lines 24-30].
- The claimed step of "determining whether a given packet of the plurality of packets is a multicast packet or a unicast packet, wherein a multicast packet is designated for transmission from a plurality of modulators and a unicast packet is designated for transmission from only one modulator of the plurality of modulators" is met by the correlation between each individual set-top processor and each individual modulator and multicasting the given packet from the receiving set-top processor's

assigned modulator to a processor subset (in the case of unicasting, this subset would clearly be a subset of one processor) of which the receiving set-top processor is a member [claim 1]. The determination is done using the routing table described in column 5, lines 3-14, which determines the modulator assigned to each individual set-top processor.

- The claimed step of "transmitting and modulating the given packet from more than one modulator of the plurality of modulators when the given packet is a multicast packet; and transmitting and modulating the given packet from only one modulator of the plurality of modulators when the given packet is a unicast packet" is met by steps (E), (F), and (G) of claim 1, which state multicasting the given packet from the receiving set-top processor's assigned modulator to a processor subset of which the receiving set-top processor is a member, routing the given packet to the receiving set-top processor, and recognizing the given packet at the receiving set-top processor as a packet that is addressed to the receiving set-top processor. Depending on the routing table and the packet delivery destination information, the packet could be routed to one or more processors, therefore meeting the claimed multicast or unicast transmission.

Regarding claim 2, the claimed determining step of the method of claim 1 is further met as follows:

- The claimed step of "identifying packets of the plurality of packets that are to be transmitted from at least one modulator" is met by the routing table described in column 5, lines 3-14, which determines the modulator assigned to each individual set-top processor and aids in routing the received packets to the appropriate modulator or modulators.
- The claimed step of "associating a modulator identifier with each identified packet, wherein the modulator identifier identifies each modulator from which the packet is to be transmitted", is again met by the routing table described in column 5, lines 3-14, which determines the modulator assigned to each individual set-top processor and aids in routing the received packets to the appropriate modulator or modulators.

Regarding claim 14, the claimed "method of claim 1, wherein at least one modulator of the plurality of modulators is a radio frequency modulator" is met by the RF Components 64 QAM Modulators 62 of Figure 2A [col. 4, lines 32-35].

Regarding claim 15, the claimed "method of claim 14, wherein the radio frequency modulator is a quadrature amplitude modulation modulator" is, again, met by the RF Components 64 QAM Modulators 62 of Figure 2A [col. 4, lines 32-35].

Regarding claim 16, the claimed "method of claim 1, wherein the packets of the transport stream include packets conforming to MPEG protocols, and the given packet has a first PID when it is received and a second PID when it is transmitted, wherein the second PID is different from the first PID" is met by the discussion that the system is built around an ATM and MPEG standard to deliver requested services [col. 1, lines 34-

38]. Also, the PID is met by the VCI (Virtual Channel Identifier) and VPI (Virtual Path Identifier), which are present in each packets header field and allow for identification of a particular service [col. 4, lines 57-65]. The VPI is translated to a new VPI value before it is routed through the given output modulator [col. 5, lines 3-17].

Regarding claim 17, the claimed "method of claim 1" is further met as follows:

- The claimed step of "receiving a second transport stream at a second input port, the second transport stream including a plurality of packets" is met by the reception of the transport stream containing multiple packets (or cells, as they are often referred to) at the input to the ATM switch and multiplexer, which performs CP/VC switching on all forward data [col. 6, lines 24-30]. Multiple Media Servers 42 pictured in Figure 2A indicate that multiple transport streams can be received.
- The claimed step of "extracting from the first and second transport streams each packet that is to be transmitted from at least one modulator of the plurality of modulators" is met by the routing table described in column 5, lines 3-14, which determines the modulator assigned to each individual set-top processor and aids in routing the received packets to the appropriate modulator or modulators.
- The claimed step of "sorting extracted packets into a plurality of groups, the plurality of groups including a multicast group that includes multicast packets from the first and second transport streams and at least one unicast group that includes unicast packets from the first and second

transport streams" is met by steps (E), (F), and (G) of claim 1, which state multicasting the given packet from the receiving set-top processor's assigned modulator to a processor subset of which the receiving set-top processor is a member, routing the given packet to the receiving set-top processor, and recognizing the given packet at the receiving set-top processor as a packet that is addressed to the receiving set-top processor. Depending on the routing table and the packet delivery destination information, the packet could be routed to one or more processors, therefore meeting the claimed multicast or unicast groups.

Regarding claim 18, the claimed "method of claim 17, further including the step of: associating a modulator identifier with each packet of the multicast group, wherein the modulator identifier identifies each modulator of the plurality of modulators from which the associated packet is transmitted" is met by the routing table described in column 5, lines 3-14, which determines the modulator assigned to each individual set-top processor and aids in routing the received packets to the appropriate modulator or modulators.

Regarding claim 19, the claimed "method of claim 17, wherein the at least one unicast group is a plurality of unicast groups, each unicast group is associated with a given modulator of the plurality of modulators, and further including the step of: associating a modulator identifier with each packet of each unicast group, wherein the modulator identifier identifies the given modulator of the plurality of modulators from which the associated packet is transmitted" is met, again by the routing table described

in column 5, lines 3-14, which determines the modulator assigned to each individual set-top processor and aids in routing the received packets to the appropriate modulator or modulators. Furthermore, multicasting is accomplished by transmitting the given packet from the receiving set-top processor's assigned modulator to a processor subset (in the case of unicasting, this subset would clearly be a subset of one processor) of which the receiving set-top processor is a member [claim 1].

Regarding claim 20, the claimed "method of claim 19, wherein the first and second transport streams include packets that conform to MPEG protocols" is met by the discussion that the system is built around an ATM and MPEG standard to deliver requested services [col. 1, lines 34-38].

Regarding claim 21, the claimed "method of claim 20, wherein at least one packet of the first transport stream has a first PID value associated therewith and at least one packet of the second transport stream has a second PID value associated therewith, and wherein the first PID value and the second PID value are the same value" is met by the VPI and VCI values of those input streams pictured in Figure 5A. Two of the input streams have the same VPI values of 049.

Regarding claim 22, the claimed "method of claim 19, wherein when a packet conforming to MPEG protocols is received the packet has a first PID value associated therewith, and the packet has a second PID value associated therewith when the packet is transmitted and when the packet is a multicast packet" is met by the discussion that the system is built around an ATM and MPEG standard to deliver requested services [col. 1, lines 34-38]. Also, the PID is met by the VCI (Virtual Channel Identifier) and VPI

(Virtual Path Identifier), which are present in each packets header field and allow for identification of a particular service [col. 4, lines 57-65]. The VPI is translated to a new VPI value before it is routed through the given output modulator [col. 5, lines 3-17].

Regarding claims 23 and 24, see the above rejection to similar claims 1 and 2.

Regarding claims 36-44, see the above rejection to similar claims 14-22.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3-13, 25-35, and 45-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et al (USP 5,819,036), in view of Du et al (USP 6,088,346), both cited by Examiner.

Regarding claim 3, the Adams reference teaches all of that which is discussed above with regards to claim 2. Adams further teaches the step of "processing the given packet for transmission from at least one multimodulator". He meets this step by processing the packet according to the routing table discussed above with reference to Column 5, lines 3-14. Adams does not disclose the step of "copying the given packet when the given packet is a multicast packet". The Du reference, does, however, disclose that when a multicast connection is required of a cell (packet), the packet is copied in accordance with the number of connections defined by the multicast

connection and written into a respective buffer memory [col. 11, lines 19-22]. Furthermore, the claimed step of "providing each modulator identified by the modulator identifier with a copy of the given packet, wherein each copy has a common output PID value associated therewith" is met inherently by the fact that the packet is a copy, therefore indicating that it would have the same PID and the fact that the Adams reference teaches providing the packets to the modulators based on the routing table described in column 5, lines 3-14, which determines the modulator assigned to each individual set-top processor. It would have been clearly obvious to one of ordinary skill in the art at the time of the invention to copy the packets that are multicast packets, in order to allow multicasting over multiple modulators. Claim 1 of the Adams reference refers to multicasting the packets, but over only one modulator. Multiple modulators (therefore requiring multiple copies of the packets) could be used to multicast to a larger group of users.

Regarding claim 4, the Adams and Du references teach all of that which is discussed above with regards to claim 3. Neither reference, however, specifically disclose that the processing step includes encrypting the given packet. The Examiner takes OFFICIAL NOTICE that it is notoriously well known in the art to encrypt content before transmission over and open network (such as those in use in the two references). It would have been clearly obvious to one of ordinary skill in the art at the time of the invention to encrypt the packets before transmission, in order to provide content to subscribers more securely through encryption.

Regarding claim 5, the Adams and Du references teach all of that which is discussed above with regards to claim 3. Furthermore, the Adams reference does not disclose the step of "storing in a buffer of a plurality of buffers each identified packet having a modulator identifier associated therewith". The Du reference, does, however, indicate the use of a buffer for storing multicast packets before transmission [col. 11, lines 14-25]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use buffer memories for storing packets, in order to possibly modify the packets or store the packets for multiple transmissions. The Adams reference does mention this functionality when he discusses the ability to "include" the designator of the receiving set-top processor's assigned modulator in the given packet [Adams, claim 1]. Obviously, in order to place the indicator into the packet, a buffer, or some other sort of storage memory would be required.

Regarding claim 6, the Adams and Du references teach all of that which is discussed above with regards to claim 5. Furthermore, the Adams reference does not disclose, "a first buffer of the plurality of the buffers is a multicast buffer for storing multicast packets, and wherein a second buffer of the plurality of the buffers is a unicast buffer for storing unicast packets". The Du reference, does, however, indicate the use of a buffer for storing unicast packets and a buffer for storing multicast packets before transmission [col. 11, lines 14-25]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use buffer memories for storing packets, in order to possibly modify the packets or store the packets for multiple transmissions. The Adams reference does mention this functionality when he discusses the ability to "include" the

designator of the receiving set-top processor's assigned modulator in the given packet [Adams, claim 1]. Obviously, in order to place the indicator into the packet, a buffer, or some other sort of storage memory would be required.

Regarding claim 7, the Adams and Du references teach all of that which is discussed above with regards to claim 5. The claimed step of "receiving a message indicating that a particular modulator of the plurality of modulators is ready to receive a packet for transmission therefrom" is not met by either reference, however, the Examiner takes OFFICIAL NOTICE that it is notoriously well-known in the art to use "ready signals" or messages in computer architectures to notify processors or other processing entities that a component is ready for data. Therefore, the Examiner submits that it would have been clearly obvious to one of ordinary skill in the art at the time of the invention to have the modulator release a "ready message" in order to indicate to the processor that it is ready for data for transmission. The claimed step of "sending the given packet from a given buffer of the plurality of buffers to the particular modulator, wherein the modulator identifier associated with the given packet identifies the particular modulator" is not explicitly met in the Adams reference. The Du reference, does, however, indicate the use of a buffer for storing multicast packets before transmission [col. 11, lines 14-25], transmission in the Adams reference occurring in the modulator that is addressed by the routing table. It would have been obvious to one of ordinary skill in the art at the time of the invention to use buffer memories for storing packets, in order to possibly modify the packets or store the packets for multiple transmissions. The Adams reference does mention this

functionality when he discusses the ability to "include" the designator of the receiving set-top processor's assigned modulator in the given packet [Adams, claim 1]. Obviously, in order to place the indicator into the packet, a buffer, or some other sort of storage memory would be required.

Regarding claim 8, the Adams and Du references teach all of that which is discussed above with regards to claim 5. Furthermore, the Adams reference does not disclose, "the plurality of buffers include a plurality of unicast buffers, each unicast buffer is associated with a given modulator of the plurality of modulators and is adapted to store unicast packets that are for transmission from the given modulator associated with the unicast buffer, and the plurality of buffers includes a multicast buffer for storing multicast packets therein". The Du reference, does, however, indicate the use of a buffer for storing unicast packets and a buffer for storing multicast packets before transmission [col. 11, lines 14-25]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use buffer memories for storing packets, in order to possibly modify the packets or store the packets for multiple transmissions. The Adams reference does mention this functionality when he discusses the ability to "include" the designator of the receiving set-top processor's assigned modulator in the given packet [Adams, claim 1]. Obviously, in order to place the indicator into the packet, a buffer, or some other sort of storage memory would be required.

Regarding claim 9, the Adams and Du references teach all of that which is discussed above with regards to claim 8. Furthermore, the Adams reference does not disclose the steps of "determining whether to check the unicast buffer associated with

the particular modulator for a unicast packet for transmission from the particular modulator or to check the multicast buffer for a multicast packet; responsive to determining to check the associated unicast buffer, retrieving from the associated unicast buffer the given packet when there is a unicast packet stored therein; and responsive to determining to check the multicast buffer, determining whether a packet stored in the multicast buffer is for transmission from the particular modulator and retrieving the given packet from the multicast buffer when the given packet is determined to be for transmission from the particular port". The Du reference, does, however, indicate the use of a buffer for storing unicast packets and a buffer for storing multicast packets before transmission [col. 11, lines 14-25]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use buffer memories for storing packets, in order to possibly modify the packets or store the packets for multiple transmissions. The Adams reference does mention this functionality when he discusses the ability to "include" the designator of the receiving set-top processor's assigned modulator in the given packet [Adams, claim 1]. Obviously, in order to place the indicator into the packet, a buffer, or some other sort of storage memory would be required. The set-top processor's assigned modulator also indicates that the packet is sent to a specific modulator or group of modulators, as disclosed in the Adams reference claim 1.

Regarding claim 10, the Adams and Du references teach all of that which is discussed above with regards to claim 9. Neither reference disclose the steps of "associating a count register of a plurality of count registers with each modulator of the

plurality of modulators; incrementing the count register associated with the particular modulator indicated by the message; and when a packet is retrieved, decrementing each count register associated with a modulator identified by the modulator identifier associated with the retrieved given packet". The Examiner takes OFFICIAL NOTICE that it is notoriously well known in the art to provide computers with general purpose count registers for accumulating arithmetic results, such as a register for accumulating the number of data packets transmitted via a certain modulator. It would have been obvious to one of ordinary skill in the art at the time of the invention to use count registers, in order to keep track of the amount of data being processed by the modulator, and to keep track of when the modulator is available and ready for transmitting a packet. The set-top processor's assigned modulator indicates that the packet is sent to a specific modulator or group of modulators, as disclosed in the Adams reference claim 1.

Regarding claim 11, the Adams and Du references teach all of that which is discussed above with regards to claim 10. The Adams reference does not disclose, "each unicast buffer is a first-in-first-out buffer, and when the given packet is retrieved from the given unicast buffer the given packet is the current first-in packet, and wherein when the given packet is retrieved from the multicast buffer the given packet is determined at least in part by the current status of the plurality of count registers and at least in part by the modulator identifier associated with the given packet". The Du reference does disclose the aforementioned buffers for unicast and multicast transmission and also proposes that newly entered packets overwrite any available

packets [col. 11, lines 50-51], indicating that the buffer functions as a first-in-first-out (FIFO) buffer, as is common in buffer technology. It would have been obvious to one of ordinary skill in the art at the time of the invention to use FIFO buffers, in order to sequentially process data for the unicast and multicast buffers. The set-top processor's assigned modulator indicates that the packet is sent to a specific modulator or group of modulators, as disclosed in the Adams reference claim 1.

Regarding claims 12 and 13, the Adams and Du references teach all of that which is discussed above with regards to claim 9. The Adams reference does not disclose, "the determination for checking the multicast buffer or the associated unicast buffer is based at least in part on the current status of the multicast buffer and the associated unicast buffer" or "the determination for checking the multicast buffer or the associated unicast buffer is based at least in part on prior determinations". The Du reference, does, however, indicate the use of a buffer for storing unicast packets and a buffer for storing multicast packets before transmission [col. 11, lines 14-25]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use buffer memories for storing packets, in order to possibly modify the packets or store the packets for multiple transmissions. The Adams reference does mention this functionality when he discusses the ability to "include" the designator of the receiving set-top processor's assigned modulator in the given packet [Adams, claim 1]. Obviously, in order to place the indicator into the packet, a buffer, or some other sort of storage memory would be required. The set-top processor's assigned modulator also

indicates that the packet is sent to a specific modulator or group of modulators, as disclosed in the Adams reference claim 1.

Regarding claims 25-35, see the above rejections to similar claims 3-13.

Regarding claims 45-55, see the above rejections to claims 23-43, which are very similar in overall content, keeping in mind that the claimed PID is met by the VPI and VCI of the content stream header.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael R. Shannon who can be reached at (571) 272-7356 or Michael.Shannon@uspto.gov. The examiner can normally be reached by phone Monday through Friday 8:00 AM – 5:00PM, with alternate Friday's off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller, can be reached at (571) 272-7353.

Any response to this action should be mailed to:

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Alexandria, VA 22314

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to customer service whose telephone number is **(571) 272-2600**.

Michael R Shannon
Examiner
Art Unit 2614

Michael R Shannon
August 3, 2005

JOHN MILLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600